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THE MATERIAL OF THOUGHT.

THE ancient distinction between form and matter in the process of thought constitutes a problem which is perenially laid to rest and which is yet perenially revived by writers who have not taken to heart the lesson which the history of philosophy ought by this time to have made unmistakably clear. We all claim to understand the difficulties of the problem as it appears in Kant. A pure *a priori* form supplied by the mind and impressed by it upon our knowledge, an entirely unformed, undefined, sensuous raw material mysteriously 'given' by the real world to the mind, and an experience which is somehow made by the combination of these two elements, are conceptions which we all claim to have abandoned. Nor is the fallacy of such a view difficult to grasp and expose, when it is thus baldly stated in its extreme form. What we do not always see, however, is that the same antithesis of form and matter, with all its attendant fallacies, still lurks in certain conceptions that are current enough in present logical discussion. We are still prone to take from common sense certain assumptions about the nature of knowledge without observing that these assumptions, if pushed to their logical conclusion, result in precisely this exploded antithesis. Of course, no one wishes to draw an indictment against common sense. Its distinctions (between fact and theory, thinking and object of thinking, for example) are useful enough for certain practical purposes; but the logician must beware of adopting these practical distinctions into his science without due criticism. It is the distinction between fact and theory, or between our actual experience and our thought about that experience, as it appears only too frequently in current logical works, that I mean to discuss.

What is it that we think about? From the point of view of common sense, the answer is obvious. Clearly we think about objects, all the multiform real things that we meet with everywhere in our experience. We are at all times confronted with a vast number of real things which demand our attention and force us to think about them. We need them in our most ordinary activities ; they obtrude their presence upon us at every turn, and without some knowledge of their natures and modes of behavior life would be continually endangered, if it were not entirely impossible. By this theory of common sense, then, the world in which we find ourselves is assumed to be a vast congeries of real objects, classified in certain rough and ready ways, perhaps obeying certain natural laws, but always to a great extent unorganized.

This view we have called the theory of common sense, because, whether or not it is actually held in this form by the 'plain man,' it clearly owes its origin to an uncritical attempt to deal with the problem of knowledge. Nevertheless, essentially the same theory has been elaborated in more than one logical treatise. As an example, I shall use in this paper the theory sketched in one of the most elaborate and most widely discussed German works on scientific methodology of the last decade, Heinrich Rickert's *Grenzen der naturwissenschaftlichen Begriffsbildung*.[1] According to the view of this author, the real world is a manifold of unique, individual objects. It is infinite in its extension, for it comprises an infinity of real individuals. Moreover, any part of it is 'intensively infinite,' for there is no limit to the number of divisions that may be made within any single individual ; it may be regarded as possessing an infinity of different aspects. With this real manifold our perceptual experience brings us into immediate contact. It is given to us as a multiplicity of perceptual objects in space and time.

The problem of scientific conception lies in the overcoming of this infinite manifold of real beings. Into this chaos it is the function of thought to introduce order. It must bring the manifold within the grasp of our finite powers, must make it comprehensible (*übersehbar*) for practical and theoretical purposes. The process by which this is accomplished is the formation of the universally valid laws of science. The characteristics of the concept, — universality, definiteness, and validity, — are all instruments by which the manifold of individual real objects is made manageable, and this instrumentality constitutes their entire value.[1] The laws are short-hand formulæ which resume a great mass of real objects; they are not themselves real, but are mental constructions which serve the scientific purpose of overcoming the manifold. The method by which science proceeds is therefore that of abstraction. Its end can be attained only by reducing the number of qualities with which it has to deal within determinate limits, and it is successful precisely in proportion as the number grows smaller. Starting with the perceptual manifold, which has an infinity of qualities both extensively and intensively, it must reduce the number of perceptual things with which it deals by resolving them into conceptual relations. Its goal is the complete elimination of perception by the ultimate reduction of the thing to a purely conceptual and ideally defined 'Dingbegriff.'[2] The progress of scientific thought, therefore, from Rickert's point of view, is always in the direction of greater and greater abstraction; the more abstract it becomes, the more successful it is. The farther it recedes from the world of concrete reality, the more it realizes the ideal of conceptual thinking.

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[1] Especially Ch. I. I say the view which Rickert 'sketches,' because he is primarily concerned not with scientific method in general but with the method of history. His view of generalizing thought, however, is developed at considerable length and is perfectly definite and explicit.

The question we would raise is whether such an account of the procedure of science is adequate to the nature of our thinking. In the first place, there is a question of fact to be considered. Does our actual experience present us with such an endless multiplicity of real objects as this theory assumes, and does such a manifold set the problem which our thinking tries to solve? Is a vast multitude of individual, concrete facts really prior to any explanation of the facts? If we examine those forms of experience in which conceptual abstraction is at a minimum, I do not believe that even there the position will be found tenable. Is it true that a child first becomes aware of a multitude of unique real objects and then reduces them to comprehensibility by making abstractions? Surely a child has all sorts of explanations for the objects about him quite as soon as he has any clear knowledge of the objects themselves. His explanations are not those of his grown-up friends, but they are certainly serious attempts on his part to reach solutions which shall be logically satisfactory to him. Again, if we take the naïve adult experience, from which science in the first instance must start, we find no lack of explanation. Common sense has its theories as well as its facts, and one is not more natural to it than the other. The explanations may be absurd from the point of view of science, but it can scarcely be maintained that they are not indigenous to naïve experience itself.[1] Of course, I do not mean to maintain that the naïve thinker is unable to distinguish an indefinite number of objects in space if he has any occasion to do so. But it is surely not true that such a manifold presents itself to the plain man as something incomprehensible which must be overcome by a conceptual scheme. Like the scientific thinker, the plain man finds his problems in the inadequacies of his own crude theories.

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[1] Ch. I, §§ 1, 2, 3. See summary also, p. 123.

[2] Ch. I, § 4.

If we take into account primitive attempts at scientific explanation, we shall find precisely the same condition to exist. Would anyone seriously maintain that the motive of Greek philosophy was to overcome a manifold of isolated facts? True, the theories of the Pre-Socratic Philosophy are simple and naïve, but the facts which it endeavors to explain are correspondingly few. Is it not a glaring case of the psychologist's fallacy to assume that the same diversity of problems, — and this would surely be the case, if mere number of objects constituted the problem of science, — presented itself to these early thinkers as to us, who have been taught what facts to look for by more than twenty centuries of thinking? For the Greek astronomers the different orbits of the sun, the moon, and the planets had been discovered and were explained by assuming a series of geocentric spheres in which these heavenly bodies were supposed to be fixed. The motions of all the other bodies were explained merely by supposing them to revolve with the heaven of fixed stars. Are we to suppose, then, that the varying motions of all these other bodies were facts for them in anything like the sense that they are for a modern astronomer, equipped with the elaborate astronomical theories of the present? We certainly know that this was not the case; to the Greeks it must actually have appeared to be a fact that the stars moved as they supposed them to move. In the progress of science, therefore, the discovery of facts and the formation of theories advance *pari passu.* Science at its inception is not face to face with a manifold of individuals which it must simplify; it has a few facts and a crude theory. Its progress means the extension and transformation of its theory to explain new facts, and the reinterpretation of all the facts in the light of the theory.

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[1] It is not clear that Rickert would deny this, since he assumes that conceptualization begins with a more or less spontaneous, 'psychological' development of general word-meanings. *Cf.* Ch. I, § 1, pp. 32 ff., especially, pp. 39 f.

We have not reached the true merits of the logical problem, however, when we have shown that facts and theories are synchronous in our experience. The fact that both are present, while it establishes the presumption that there is a close logical relation between them, does not explain the nature of that relation or define the meaning of each for our experience. Into this problem we must look somewhat more closely.

The logical error involved in the position I have been combating lies in the assumption that there are two generically different kinds of knowledge and experience, — the categorical knowledge of particular individuals and the hypothetical knowledge of universal explanation, — an assumption which is neither more nor less than the old distinction between form and matter.[1] For unique particulars to which thought can never do justice and scientific universals which are constructed by mere abstraction can never unite to form an organic experience. It must necessarily remain a mystery how thought can get a foothold among such a chaos of individuals, and also how it can accomplish any fruitful result if it is admitted to be able to deal with the particulars. A congeries of absolutely unique individuals, — provided uniqueness means mere isolation and not a logical relation actually established by thought, — is nothing short of a multiplicity of absolutes, which, by definition, cannot be reduced to order, and which therefore offers no problem to thought. On the other hand, if thinking involves progressive abstraction, and hence the omission of more and more characteristics of the real individuals with which thought deals, we are apparently committed to the hopeless doctrine that the more we think the farther we go away from the real. Just why thinking ends in theoretical or practical control is therefore not clear.

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[1] *Cf.* also W. Windelband's "Geschichte und Naturwissenschaft," in the number of the Strassburg publications entitled *Das Stiftungsfest der Kaiser-Wilhelms-Universität Strassburg am 1. Mai, 1894.* The same assumption is everywhere present in Rickert's book. *Cf.* in particular the discussion of "Dingbegriffe und Relationsbegriffe," Ch. I, § 4, pp. 75 ff. Note that Rickert admits in the end that his 'ultimate thing-concept' is really a concept of relations, except that by a logical fiction we treat it *as if* it were the concept of a thing.

Let us take up the latter point first. If thinking consists in leaving out of account certain qualities of real objects in order to bring a larger range of individuals under our concept, is it not clear that we are necessarily approaching a point where content must vanish altogether? If anything whatever lies at the end of such a process, it must be the pure form of experience without any empirical content at all. Accordingly, the goal of thinking is apparently a sort of euthanasia; thought accomplishes its purpose of attaining a universal generalization at the expense of making a statement which must be absolutely trivial. This applies to every real object in the world, because it is so meaningless that there is no reason why it should be applied to one more than another. Clearly this is a travesty on the nature of generalizing thought. A true generalization is not merely the expression of a quality common to a number of particular objects, but is an interpretation of the particulars which it subsumes. It relates the particular facts under it, and exhibits each in the light of the others. But this kind of generalization involves much more than mere abstraction; it is essentially a process of bringing to light implicit logical relations and of attaining rational organization within experience.

To return to the first point, the attempt to start scientific thinking from a mere manifold of unique individuals sets for thought a problem which is at once unreal and impossible. A mere manifold of objects or facts, *qua* unrelated manifold, does not constitute a problem which we can solve by thinking. Are there not always about us an infinity of objects, if we choose to take note of them, about which we never feel the least impulse to think, so long as they remain a mere manifold of objects? Millions of pebbles lie about the streets that we walk over every day, thousands of trees dot the landscapes we see, yet in neither of these cases is there any problem involved in the mere multitude of individual objects. Moreover, this multiplicity is always a relative matter. What is it that constitutes the unit of enumeration? If one were asked to count all the objects in one's field of vision, the problem would be obviously absurd unless one were given some clue by which to determine what was to be taken as a unit. The whole experience may be a single unit, if there is no occasion for its differentiation, and there is no part of the experience so minute or so strictly unified that, if need be, other units may not be counted within it. The very terms simplicity and multiplicity imply a principle of unity by which some parts of the experience under consideration are constituted units; counting is always the distinguishing of parts within a whole.[1]

It is therefore sufficiently clear that mere multiplicity of objects offers no problem with which thought can deal. Where, then, is this problem to be found? It may no doubt be answered that it is a need which sets the problem for thought. Mere manifoldness, it will be said, is not a problem, because we do not want anything from the manifold. If we had a use for all the stones and trees that we see, we should no doubt theorize about them, discover their numbers and sizes, their identities and differences, and all their qualities. The problem of thought, according to this view, is set by a practical situation, a tension within our experience, a need which must be satisfied. But this position will bear closer inspection no better than the other. No one would deny, of course, that we sometimes think in order to satisfy our needs; the want of a certain article may turn our attention to the problem of getting it, and, in order to get it, knowledge may be required which we do not yet possess. The need is the stimulus which urges us on to think. But this in no way involves the further assumption that the problem which thought solves is primarily a practical one. The thinking as such does not attain the desired end, but merely shows the course of further activity which must be pursued if the desire is to be realized. The mere need as such furnishes no problem of which thought can give a solution.

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[1] Rickert himself points out the relative nature of multiplicity, but fails to see its bearing on his fundamental assumption. *Op. cit.*, p. 37.

Let us examine the procedure of thought when we face such a practical difficulty. The cognitive elements involved in such an experience appear to be: (1) the knowledge of an actually existent situation which thwarts our desires, and (2) an end to be realized or an ideal situation consonant with our desires. The two situations, the actual and the ideal, are incongruous with each other, and the practical problem involved is the manipulation of the actual, in order to bring about the ideal. The cognitive problem is to discover the manner in which this may be accomplished, — in other words, to do away with the logical incongruity which prevents the ideal situation from coming into being. The actual situation has qualities which negate the ideal. Since it is actual, it is assumed to be a logically consistent situation; that is, a valid reason can be given in explanation of all its qualities to show why it must be as it is and not otherwise. Knowledge of the actual consists in an understanding of these reasons, in a conception of the logical relations which make the situation a logical whole. But the introduction into this experience of an ideal situation not yet realized leads to logical inconsistency. The problem of knowledge then becomes: How can the actual and the ideal be thought consistently together in such a way that no logical incongruity stands in the way of our actualizing the ideal? When this problem is solved, we know how to satisfy our desire; that is, we know what qualities of the actual must be changed in order to bring about the condition we desire. Of course this does not involve the practical realization of the ideal, for that may still lie outside our powers, though our knowledge may be quite perfect. The need, therefore, does not constitute the problem which thinking solves; but this is rather constituted by the incongruous logical relations introduced into our experience by the conception of an ideal situation. Even had the need been merely the desire for knowledge, merely the need for a logically consistent experience, not the desire but the inconsistent experience would have set the problem which thought had to solve.

This account of the part which thought plays in dealing with a practical difficulty affords a clue to the understanding of the action of thought in all other cases. The one problem which thought is able to solve is the problem which is presented by an inconsistent experience. It is not the variety of objects we may have before us, or our need of manipulating them, which presents a problem to thought. Only in case experience is not logically coherent do we have a difficulty with which thought can deal. Thus, when the discovery of a new fact makes it necessary to reformulate a theory, it is not the fact as an isolated bit of knowledge which necessitates the reformulation. It is the inconsistency of the new fact with the other facts on which the theory is founded. The attempt to think all the facts together as explained and unified by the theory ends in failure, because the new fact involves certain relations which the theory fails to express.[1]

But, it will no doubt be asked, how does this explain the origin of the fact itself? Are we not presupposing that the fact comes to consciousness before it can be known to be either consistent or inconsistent with our established body of knowledge? Does not the fact, then, rest upon observation or upon some process of immediacy distinct from and prior to the formal organization of experience?

We have already endeavored to show in the preceding discussion that fact and theory advance *pari passu*, and that neither has any proper meaning apart from the other. It follows, therefore, that the procedure which, for practical purposes, may be called discovery of new facts, as distinguished from the relatively different procedure called explanation or theorizing, must properly form part of the process of thought itself. The attempt to regard observation as a logical function outside formal thought cannot escape the fallacy of separating form and matter. For if the process of knowledge is supposed really to begin with an observation of facts which are later to be theorized, there appears to be no other supposition possible than that observation furnishes the material about which we think and that thought is a formal way of dealing with this material. But it is sufficiently clear from the actual procedure of science that observation is always to a great degree selective; that is, its significance is determined by the scientist's conception of the rational whole within which he supposes his particular cases to fall. The more perfect the formulation of the theory, the more completely is the course of experimentation and observation controlled by it. To such an extent is this the case that, in physical science of the present day, I suppose experiments are rarely or never undertaken which are not intended to be crucial on some doubtful point. But even in the most chaotic experience, there is no reason to suppose that observation is quite unselective; and it is difficult, if not impossible, to see what observation could mean if the experience into which it fell were entirely unorganized. The observations would apparently have no bearing on anything, and hence would be entirely without significance.

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[1] There should be no need to argue before the present generation of philosophical scholars that a theory must take account of all the facts obtainable. Accordingly, the not infrequent strictures of certain self-styled 'empiricists' on what they are pleased to call 'intellectualism' or 'rationalism,' — as if there were still a group of thinkers seeking to maintain the virtue of pure *a priori* speculation *in vacuo*, — ought to require no refutation. Such criticisms reflect the inadequacy of their authors' conception of thought rather than the theories of any living philosophers. We shall therefore assume, when we speak of the problem of thought as being the introduction and maintenance of logical coherence within experience, that any form of consistency which rests on the neglect or distortion of facts is not here in question. The method of thought is not that of Roman conquest, — *ubi solitudinem faciunt, pacem appellant.*

Accordingly, the process of observation should be conceived as one moment in the total function of rationalizing thought. It is a part of the procedure by which the end of rationality is achieved; and its value, therefore, can be understood only in relation to this concrete process. Thought discovers its problem alike in imperfect organization and in the lack of the necessary concrete facts to make the system intelligible. It is not enough that thought should attain formal unity and coherence, but it must also reach out for all the facts which experience has to offer. If, however, experience is considered at a relatively undeveloped stage, the two defects, — imperfect organization and incomplete grasp of fact, — must go hand in hand. For if the organization is incomplete, the significance of the facts cannot be clearly perceived; and if the facts are not yet known and understood, the organization must remain merely tentative. Any unity short of complete totality is always in a state of unstable equilibrium, and hence must undergo constant revision and reconstruction. But the process of reconstruction is more than the redistribution of a number of existing facts. It is a genuine epigenesis, a process of organic growth, which brings to light new facts at the same time that it relates and systematizes them.

The net outcome of our criticism of Rickert's position, therefore, lies in the fact that he conceives the relation between fact and theory in a merely external way. Fact, or the experience of the real world of individuals, is defined solely as that sort of experience which conception can never quite attain, while conception gets its definition from the fact that it can never quite do justice to the perceptual reality. Experience is therefore necessarily dichotomized into two antagonistic elements which by definition cannot stand in essential relations, and must therefore be externally and mechanically imposed one upon the other. The only remedy lies in the complete surrender of this position and in the recognition that the isolated, unique individual and the merely general concept are opposed abstractions, neither of which can, in the nature of the case, be real. They are limiting conceptions which lie at opposite ends of two processes of abstraction, and which are both equally distant from the concrete reality. The one is the final term of that series of abstractions which emphasizes the immediacy of experience, and which finally rests in the merely given, the isolated individual unrelated to every other content of experience. The other lies at the end of that series of abstractions which puts all its emphasis on the merely relational aspect of experience, and which therefore reaches its final term in a purely hypothetical relation that has no point of contact with real individuals whatever.

The concrete reality, however, is neither of these, but is the living unity of the two. In all knowledge we are able to distinguish two aspects, the categorical reference to reality which we have called fact, and the hypothetical or universalizing tendency which brings every so-called fact under a general principle. Either aspect may be dominant in any particular judgment, but the total elimination of either could end in nothing except the destruction of the judgment itself. Every fact, therefore, from this point of view, is an incipient theory. The categorical statement is really a meeting-point of various logical relations, and therefore it always has a more or less explicit reference to other facts. It is precisely this which constitutes the meaning or significance of a fact. In order to be a real fact, it must be relevant in some rational context. If it were not thus relevant, it could not be distinguished from an unmeaning jargon of words. On the other hand, every theory is in some sense categorical. No hypothetical statement is ever made which is not supposed to have some sort of reference to reality; it is always meant to express real relations, though they may not be exemplified at a particular time or place. Without this categorical reference, the hypothetical judgment would lose its meaning. At the same time, the more or less abstract development of the merely relational aspect of experience results indirectly in the enriching of the categorical experience from which the generalization began, because it brings to light latent relations which further define and interpret the original facts.

Our real experience, therefore, is always an interpenetration of form and matter, of categorical reference and hypothetical relation. In the language of logic, experience is invariably in the form of a judgment; that is, it is always a synthesis of parts within a logical totality, a unity in differences. The description of concrete experience as a mere manifold of perceptual objects, each unique and isolated, is merely an assertion of difference to the exclusion of the other aspect of judgment, its unity. It is an abstraction which negates the possibility of rational knowledge, because thought is able to work only within an experience which has the judgment form. For thought is precisely the function by means of which this logical unity in difference is maintained and extended. In every case the problem of thought is the elimination of inconsistency and the extension of rationality within the all-inclusive judgment which supports experience. Clearly this problem implies some degree of organization already achieved, for inconsistency has no meaning except within an experience already partially rational. Concrete thought is the process of growth by which this organic experience expands. It is at once a process of integration and differentiation in which both its categorical and its hypothetical aspects attain progressively more and more complete expression.

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